Variable	Median (min-max)
Age at treatment median	79 years (39-97)
Mean treated volume	7,78 cc (0,95-47,31)
Variable	**N=65 (%)**
Histology	
Squamous	27 (41,5%)
Basal cell	35 (53,9%)
Other (angiosarcoma, pilomatrix Ca)	3 (4,6%)
Intention to treat	
Radical	10 (15,4%)
Adjuvant	50 (76,9%)
Rescue	5 (7,7%)
Dose prescribed	
<45	4 (6,2%)
45	31 (47,7%)
50	29 (44,6%)
>50	1 (1,5%)
Technique	
Intersticial	54 (83.1%)
Plesiotherapy	10 (15,4%)
PDR	1 (1.5%)
Toxicities	
Acute	
Radiodermatitis (GI, GII)	28 (43,1%)
Chronic	
Acromia	27 (41,5%)
Hypercromia	5 (7,7%)
Alopecia	6 (9,2%)
Telangiectasias	15 (23,1%)
Buttonhollow	5 (7,7%)

Conclusion

We have revised a sample of patients treated with brachytherapy in our department. Our experience indicates that it is a safe treatment with excellent control rates and without severe acute or chronic toxicities. Our results are similar to others published previously in the literature. An update with the results of the 273 cases treated at our institution will be realized before the ESTRO congress presentation date, and the data will be reported.

OC-1054 MAASTRO applicator, a novel rectal applicator for contact brachytherapy with 192Ir HDR sources

M. Bellezzo[1,2], G.P. Fonseca[1], R. Voncken[1], A. Verrijssen[1], C. Van Beveren[1], E. Roelofs[1], H. Yoriyaz[2], B. Reniers[3], E.J. Van Limbergen[1], M. Barbée[1], F. Verhaegen[1]

[1]Department of Radiation Oncology MAASTRO, GROW School for Oncology and Developmental Biology- Maastricht University Medical Centre+, Maastricht, The Netherlands ; [2]Instituto de Pesquisas Energéticas e Nucleares IPEN-CNEN/SP, Centro de Engenharia Nuclear, São Paulo, Brazil ; [3]Hasselt University, Research group NuTeC- Centre for Environmental Sciences, Diepenbeek, Belgium

Purpose or Objective

The standard care for rectal cancer includes surgery, which may be avoided if complete response is achieved, e.g. with chemoradiotherapy (EBCRT) or external beam radiotherapy EBRT, adopting a watch and wait strategy. Studies report a local regrowth reduction from 30% (EBCRT alone) to 11% when EBCRT is associated with a radiation boost using 50 kV x-rays (CXB), technique that allows a high dose delivery to a highly selective volume, allowing preservation of organs at risk (OAR) and low toxicity. However, CXB is not widely adopted due to its low cost-effectiveness. Hence, the MAASTRO applicator was developed to deliver a dose distribution similar to those generated by CXB devices, but using HDR ^{192}Ir sources, as a cost-effective alternative to CXB, with possibility of integration to treatment planning systems (TPS).

Material and Methods

Fig 1-a shows the applicator design, a cylindrical applicator with 5 channels and a slanted edge, using its tip as contact surface. The slanted edge is designed to facilitate the applicator placement against tumors (Fig 2) and allows to bend the channels to position the ^{192}Ir HDR source at multiple positions parallel and close to the contact surface (Fig 1-b), resulting in a modulated dose distribution with steep falloff due to the inverse square law. The applicator was designed to be used with a proctoscope (also with a slanted edge) for visual guided positioning with lateral shielding to spare OAR and a plastic cap to stop secondary electrons. The applicator design was achieved by Monte Carlo modeling and validated experimentally with film dosimetry, with the Papillon 50 (P50) CXB device adopted as reference regarding dose falloff, radiation field size and treatment time.

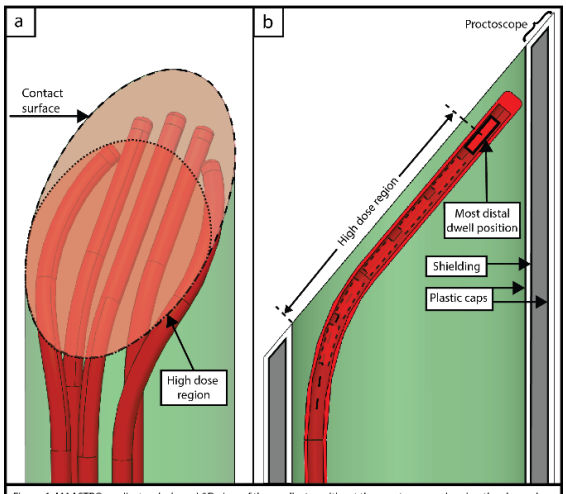

Figure 1: MAASTRO applicator design. a) 3D view of the applicator without the proctoscope, showing the channel arrangement. The contact surface (surface that touches the tumor) has an elliptical shape with diameters of 20.8 and 32.5 mm. However, the high dose region within the treatment surface is approximately 20 x 20 mm2. b) Cross section view of the applicator (along the central channel) inserted into the shielded proctoscope, showing that the most distal dwell position doesn't reach the edge of the applicator, resulting in a high dose region that doesn't cover the whole contact surface.

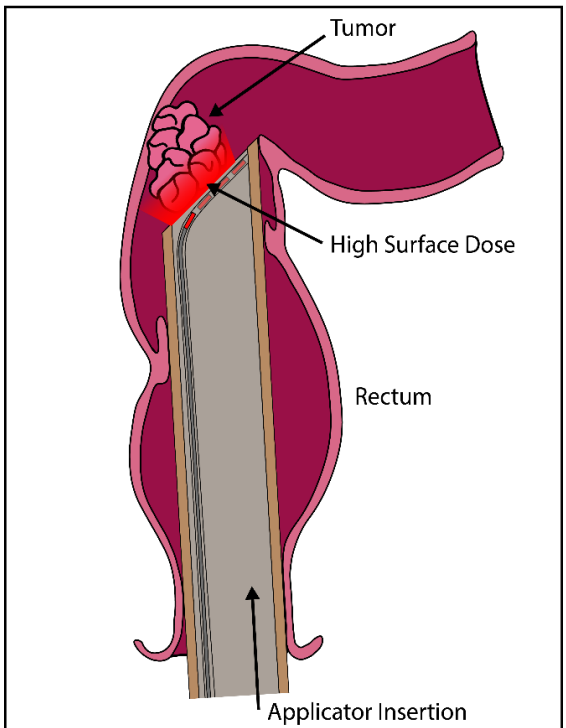

Figure 2: Schematic drawing of the MAASTRO applicator positioned against a tumor

Results
Due to the applicator geometry, the most distal position of the source in each channel doesn't reach the sharp edge of the applicator, resulting in an effective treatment surface (high dose region shown in Fig 1 a and b) of approximately 20 x 20 mm^2, which is smaller than the contact surface. The resulting dose falloff is steeper than the one resulting from the P50 with a 22 mm applicator. With the dose falloff normalized at 2mm, the relative dose values delivered at depths of 0, 2, 5 and 10 mm are, respectively, 130, 100, 70 and 43% for the P50 and 140, 100, 67 and 38% for the applicator. The time required to deliver an average dose of 32 Gy to the treatment surface of the applicator is 5m30s for a 40700 U source (new source) and 8m30s for a 20350 U source (source to be replaced), including the time required to perform obstruction verification before irradiation. The applicator delivers a high dose to a small target volume while the lateral shielding spares normal tissues in all directions other than the contact surface.
Conclusion
The MAASTRO applicator was designed to deliver dose distributions similar to those of CXB devices using 192Ir HDR sources. The applicator has the advantage of TPS integration, increasing the degrees of freedom to modulate the dose distribution.

OC-1055 Promising Outcomes of Perioperative Interstitial HDR Brachytherapy in adjuvant treatment of keloids
A. George[1], K. Koushik[2], R. C.Alva[2]
[1]M.S.Ramiah medical college, Radiation Oncology, Kottayam, India ; [2]M.S.Ramiah Medical College, Radiation Oncology, Bangalore, India

Purpose or Objective
Keloids are benign fibroproliferative scars, characterised by bizarre cosmesis and painful itching.They are prone for high rates of recurrence with single treatment modality having 80-100% recurrence with surgery alone.Various adjuvant treatment modalities like intralesional steroids, laser therapy,silicone gel sheets have been tried,with recurrence rate still being as high as 50%.Currently excision followed by adjuvant radiation is the most effective treatment with control rates ranging from 67-98%.
Even though literature reports have concluded a BED of 30 Gy to achieve recurrence rates of < 10 %, because of different treatment options like EBRT, HDR or LDR brachytherapy, optimal dose fractionation is still uncertain.The aim of our study was to analyse treatment outcomes of perioperative interstitial HDR brachytherapy as adjuvant treatment of keloids in terms of local control and cosmetic outcome.
Material and Methods
From 2014 to 2017, 34 keloids in 26 patients who were planned for excision and intraoperative placement of brachytherapy tubes were analysed. 1 patient did not receive treatment due to infected keloid, and was excluded from treatment outcome analysis. After complete excision of keloid, a single flexicath tube was placed subcutaneously on the post op bed **(fig 1)** before closing the wound with sutures. A 3mm slice planning CT scan was done and the target included the entire scar line. Radiation to a total dose 15 Gy in 3 divided doses was delivered on day 0,1,2 of surgical excision ,with first fraction being delivered within 24 hours of excision. After the last fraction,tubes were withdrawn and suture removal was done around day 10 of follow up.
Results
The median age was 32 years(range:18-71),out of which 50% were males and 50% females.The most common site of keloid was ear lobe (40%) followed by sternum (20%) and forearm (15%).The most common presenting complaint were cosmesis,itching and pain. 40% of subjects were patients who had received a previous treatment either surgery or corticosteroid injection but had recurrence in the same region.The median size of keloid before brachytherapy was 80mm [2]. The median follow up was 3.8 years. 6 patients had local recurrence (17.6%) and median time to recur was 8 months.1 patient had recurrence outside treated region. Ear lobe was the most common site of recurrence.There was no correlation between gender, site, size or previous treatment with recurrence in multivariate analysis. No treatment related complications(infection) was seen in any patients. All patients reported symptomatic and cosmetic improvement at 1 year follow up.**(fig 2)**
Conclusion
Postoperative radiation therapy can reduce the risk of keloid recurrence. Our study shows a good local control of 82.4 % and hence suggesting that HDR brachytherapy with 3 fractions of 5Gy each is a safe and effective dosage schedule for adjuvant management of keloids with excellent local control and cosmetic results.

OC-1056 Outcomes of CT-guided radioactive 125I seed implantation for locally recurrent rectal cancer

Abstract withdrawn

OC-1057 Phase I/II trial of ultra-APBI on early breast cancer (4f-APBI): Initial feasibility results.
M. Gimeno Morales[1], R. Martínez-Monge[1], F. Martínez-Regeira[2], N. Rodríguez-Spiteri[2], B. Olartecoechea[3], L. Ramos[4], L. Pina[5], A. Elizalde[5], M. Idoate[6], M. Abengozar[6], J. Aristu[7], M. Moreno[1], L. Arbea[1], J.M. Aramendía[8], M. Santisteban[8], P. Jablonska[1], A. García-Consuegra[1], S. Fardique[1], M. Cambeiro[9]
[1]Clinica Universidad de Navarra, Radiation Oncology, Pamplona, Spain ; [2]Clinica Universidad de Navarra, General Surgery, Pamplona, Spain ; [3]Clinica Universidad de Navarra, Gynaecology, Pamplona, Spain ; [4]Clinica Universidad de Navarra, Physics, Pamplona, Spain ; [5]Clinica Universidad de Navarra, Radiology, Pamplona, Spain ; [6]Clinica Universidad de Navarra, Pathology, Pamplona, Spain ; [7]Clinica Universidad de Navarra, Radiation Oncolgy, Madrid, Spain ; [8]Clinica Universidad de Navarra, Oncology, Pamplona, Spain ; [9]Clinica Universidad de Navarra, Radiation Oncology, Madrid, Spain

Purpose or Objective
To evaluate feasibility and preliminary results of toxicity and clinical outcomes of phase I/II study of ultra-accelerated four fractions schedule for partial breast irradiation (4f-APBI) with a free-hand minimally invasive intra-operative multicatheter breast implant (FHIOMBI) during breast-conserving surgery (BCS) for early breast cancer patients.
Material and Methods
Inclusion clinical criteria were aged >40 years with clinical and radiological, ≤3cm unifocal invasive or in situ tumors were considered for FHIOMBI during BCS. Suitable patients for APBI were selected once discarded affected surgical margins, nodal spread or microscopic multifocality on final pathology report. Patients who meet criteria for APBI received 4 fractions schedule APBI (4fAPBI) with perioperative high-dose-rate brachytherapy (PHDRBT) (6.2Gy BID x 4 during 2 days). Patients who do not apply for APBI, received anticipated ultrafast-boost (5.4 Gy BID during 1 day), followed by whole-breast hipofractionated external-beam radiotherapy (WBRT).
Results
From February 2017 and May 2019, 69 patients(p) and 70 breasts were implanted, treated and analyzed. Fifty-two patients (74,3%) as 4f-APBI indication and 18 p (25,7%) as anticipated boost. All patients completed brachyterapy treatment. Major complications requiring any local procedure was document in 2p (2,8%), all cases on boost